

App. No. 10/027,677

Amendment mailed November 4, 2004

Re: Office Action mailed May 4, 2004

AMENDMENTS TO THE CLAIMS

This listing of the claims replaces all prior versions and listings of the claims in the application.

1. (currently amended) A process of producing and using a coke product, said process comprising:

(a) providing a coke precursor material of carbonaceous origin;

(b) subjecting said coke precursor material to a thermal cracking process; and

(c) maintaining the ratio of asphaltic coke to thermal coke sufficiently low so as to promote the production of sponge coke[[;]] such that said coke product is comprised of sponge coke in an amount in the range of about 40 % to 100 % by weight; and

~~wherein said coke product is comprised of sponge coke in an amount in the range of about 40% to 100% by weight.~~

(d) combusting said coke product in a combustion process.

2. (previously presented) The process of claim 1 wherein said coke product has volatile combustible materials (VCMs) present in an amount in the range of from about 13% to about 50% by weight.

3. (previously presented) The process of claim 1 wherein the ratio of asphaltic coke to thermal coke is maintained by controlling at least one variable selected from the group consisting of coke precursor material characteristics, heater outlet temperature, coking

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vessel temperature, coking vessel pressure, coking vessel thermal quench, coking vessel chemical reaction quench, and combinations thereof.

4. (previously presented) The process of claim 3 wherein said coking vessel thermal quench, said coking vessel chemical reaction quench, or combinations thereof are added into a coking vessel via injection systems selected from the group consisting of an existing anti-foam injection system, modified drill stem, an injection lance at the top of the coking vessel, and combinations thereof.

5. (original) The process of claim 1 wherein said thermal cracking process is selected from the group consisting of delayed coking, Flexicoking, and other thermal cracking processes with by-product coke production.

6-20. (canceled)

21. (previously presented) A coking process comprising:

(a) providing a coking vessel containing a coke mass and a vapor phase above said coke mass; and

(b) injecting a quench medium into said vapor phase during a coking cycle;
whereby thermal cracking in said vapor phase is quenched during said coking cycle.

22. (original) The coking process of claim 21 wherein said thermal cracking is inhibited by a quench selected from the group consisting of a thermal quench, chemical reaction quench, and combinations thereof.

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23. (previously presented) The process of claim 21 wherein:

said quench medium is selected from a group consisting of hydrogen, water, gas oil, and combinations thereof.

24-47. (canceled)

48. (currently amended) The process of claim 21 wherein said quench medium is injected via a modified drill stem positioned in said coking vessel during said coking cycle and maintained at a level about 20.5 to about 20 feet above said coke mass.

49. (previously presented) The process of claim 3 wherein said coke precursor material characteristics are modified by increasing aromatic content or decreasing content of asphaltenes and/or resins whereby said ratio of asphaltic coke to thermal coke in the coking reactions is reduced.

50. (previously presented) The process of claim 3 wherein said heater outlet temperature is decreased sufficiently below conventional heater outlet temperature whereby said ratio of asphaltic coke to thermal coke in the coking reactions is reduced.

51. (previously presented) The process of claim 3 wherein said coking vessel temperature is decreased sufficiently below conventional coking vessel temperature whereby said ratio of asphaltic coke to thermal coke in the coking reactions is reduced.

52. (previously presented) The process of claim 3 wherein said coking vessel pressure is increased sufficiently above conventional coking vessel pressure whereby said ratio of asphaltic coke to thermal coke in the coking reactions is reduced.

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53. (previously presented) The process of claim 3 wherein said coking vessel thermal quench decreases said coking vessel temperature sufficiently below conventional coking vessel temperature whereby said ratio of asphaltic coke to thermal coke in the coking reactions is reduced.

54. (previously presented) The process of claim 3 wherein said coking vessel chemical reaction quench sufficiently decreases cracking of aromatic compounds whereby said ratio of asphaltic coke to thermal coke in the coking reactions is reduced.

55. (new) The process of claim 48 wherein said quench medium is injected via said modified drill stem positioned in said coking vessel during said coking cycle and maintained at said level about 2 to about 10 feet above said coke mass.

56. (new) The process of claim 50 wherein said heater outlet temperature is decreased by about 5 °F to about 50 °F versus said conventional heater outlet temperature.

57. (new) The process of claim 56 wherein said heater outlet temperature is decreased by about 5 °F to 25 °F versus said conventional heater outlet temperature

58. (new) The process of claim 51 wherein said coking vessel temperature is decreased by about 5 °F to about 80 °F versus said conventional coking vessel temperature.

59. (new) The process of claim 58 wherein said coking vessel temperature is decreased by about 5 °F to 40 °F versus said conventional coking vessel temperature.

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60. (new) The process of claim 52 wherein said coking vessel pressure is increased by about 3 psig to 30 psig versus said conventional coking vessel pressure.

61. (new) The process of claim 60 wherein said coking vessel pressure is increased by about 3 psig to 10 psig versus said conventional coking vessel pressure.

62. (new) The process of claim 53 wherein said coking vessel thermal quench decreases said coking vessel temperature by about 5 °F to about 80 °F versus said conventional coking vessel temperature.

63. (new) The process of claim 62 wherein said coking vessel thermal quench decreases said coking vessel temperature by about 5 °F to 40 °F versus said conventional coking vessel temperature.